EVALUATION CARD FUNCTION TIMING PROM CONTENTS (S471)

EVEN LOCATIONS (functions)

ADDRESS BASE	0	2	4	6	8	A	C	E
020	X	X	X	00	00	10	00	00
030	00	01	01	01	01	01	01	01
040	01	08	08	08	08	08	08	08
050	0A	0A	0E	0E	0E	0E	2E	2E
060	2E	6A	2A	28	28	28	20	00
070	00	00	00	00	00	00	00	00

ODD LOCATIONS (drive pulses)

1	3	5	7	9	B	D	E
X	X	X	06	06	04	04	04
04	04	04	04	04	04	0C	0C
08	08	08	08	08	08	08	08
08	09	09	01	01	01	01	01
01	01	01	01	01	03	02	02
02	02	02	02	02	02	02	02

OUTPUT	FUNCTION
1	XOUT
2	XIN
3	REP
4	ANH
5	GEN
6	CLP
7	STB
8	-

A DRIVE (X+)
B DRIVE (Y+)
C DRIVE (X-)
D DRIVE (Y-)

X = DON'T CARE

NOTES: UNLESS OTHERWISE SPECIFIED:
1. REFERENCE DESIGNATION PREFIX IS A1
2. RESISTANCE VALUES ARE IN OHMS
3. CAPACITANCE VALUES ARE IN MICROFARADS
4. VCC AND GND CONNECTIONS TO INTEGRATED CIRCUITS ARE AS SHOWN IN TABLE I
5. C3 THRU C12 ARE .01μF, 10% AND ARE NOT SHOWN

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	ADDED R2 AND P2-37	6-27-77	JR K

(2)

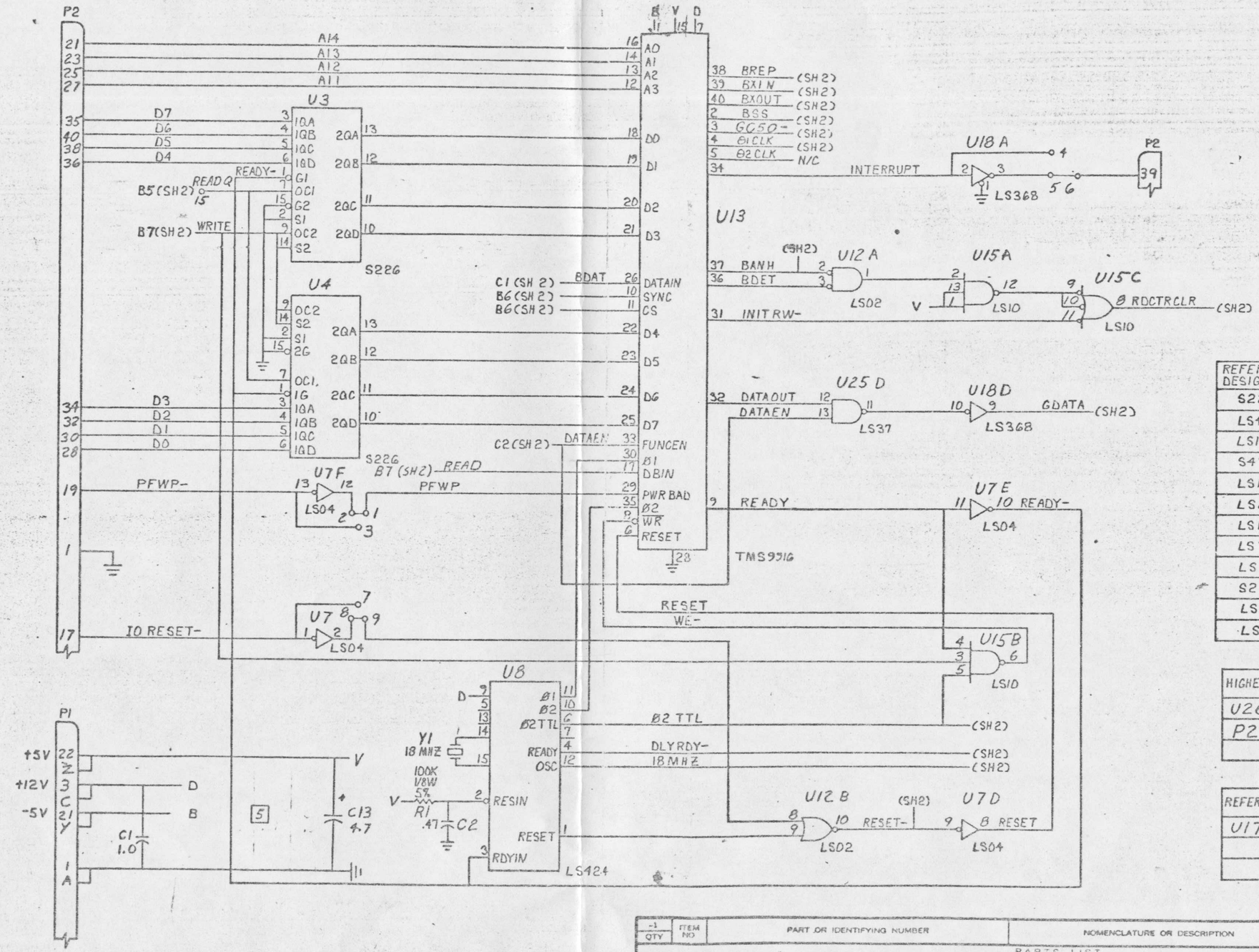


TABLE I

REFERENCE DESIGNATIONS	VCC +	VCC −	GND
S226	16		8
LS424	16		8
LSI63A	16		8
S471	20		10
LS109	16		8
LS273	20		10
LS174	16		8
LS74	14		7
LS37	14		7
S287	16		8
LS251	16		8
LS393	14		7

HIGHEST REFERENCE DESIGNATIONS			
U26	R2	Y1	C13
P2			

REFERENCE DESIGNATIONS NOT USED			
U17	U22		

-1 QTY	ITEM NO	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION	NOTES

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ±1°; 3 PLACE DECIMALS ± .010; 2 PLACE DECIMALS ± .02
- INTERPRET DRAWING PER MIL-D-1000
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIM
- DIMENSIONAL LIMITS APPLY BEFORE PROCESSES
- PARENTHETICAL INFO FOR REF ONLY

HOLE TOLERANCE

.013 THRU .125 +.004 −.001	.126 THRU .250 +.006 −.001	.251 THRU .500 +.008 −.001
.501 THRU .750 +.008 −.001	.751 THRU 1.000 +.010 −.001	1.001 THRU 2.000 +.012 −.001

326760	1211
NEXT ASSY	USED ON
APPLICATION	

DWN	DATE
K Holmes	5-10-77
CHK	
ENGR Jim Hicks	6-9-77
APVD	
QA	
CONTR	
RLSE	

TEXAS INSTRUMENTS INCORPORATED Dallas, Texas

LOGIC DIAGRAM, BUBBLE MEMORY CONTROLLER

SIZE	FSCM NO	DRAWING NO
D	96214	SK 326758
SCALE NONE		SHEET 1 OF 2

SEQ NO	IDENT	F SPEC	NO	ADDITIONAL	NOTES
	PROCESS			CLASSIFICATION	

PROCESSES — FOR CONFIGURATION TO ORIGINAL SPECIFICATIONS SEE TI DRAWING 72487

P2

BDSEL A
BDSEL B
BDSEL C

U14 LS393 — C2 (SHI) RDCTRCLR; D4 (SHI) GC50-

U11 S287

U6 LS251 — S DATAEN (SHI); W

U1 S287 — MEMEN-, A2, A1, A0, DBIN; CS-; READ-; WRITE; N/C

U7C LS04 — G CS; (SHI)

U7B LS04 — 4 READ; (SHI)

U2 S287 — A10, A9, A8, A7, A6, A5, A4, A3; N/C

R2 330

9900Ø3 READY TO µP

U19B LS109 — READQ; NC

U23A LS109 — B2 (SHI) Ø2 TTL; SYNC (SHI)

U23B LS109 — B3 (SHI) DLYRDY-; A3 (SHI) RESET-; SYNCRDY-

U18F LS368

U18C LS368

U24B LS74

U19A LS109

U12B LS02

U9 S163A — 4.5MCLK

U5 S163A — 18 MHZ; B2 (SHI)

U10 S471

U12C LS02 — FIELDOFF

U24A — BSS; Ø1CLK; BSSQ1; BSSQ2

U18B LS368 — 4.5 MCLK-

U16 LS273

U20 LS37 — BXOUT, BXIN, BREP, BANH; D4 (SHD)

U25 LS37 — C2 (SHI) GDATA; D4 (SHI) GC50-

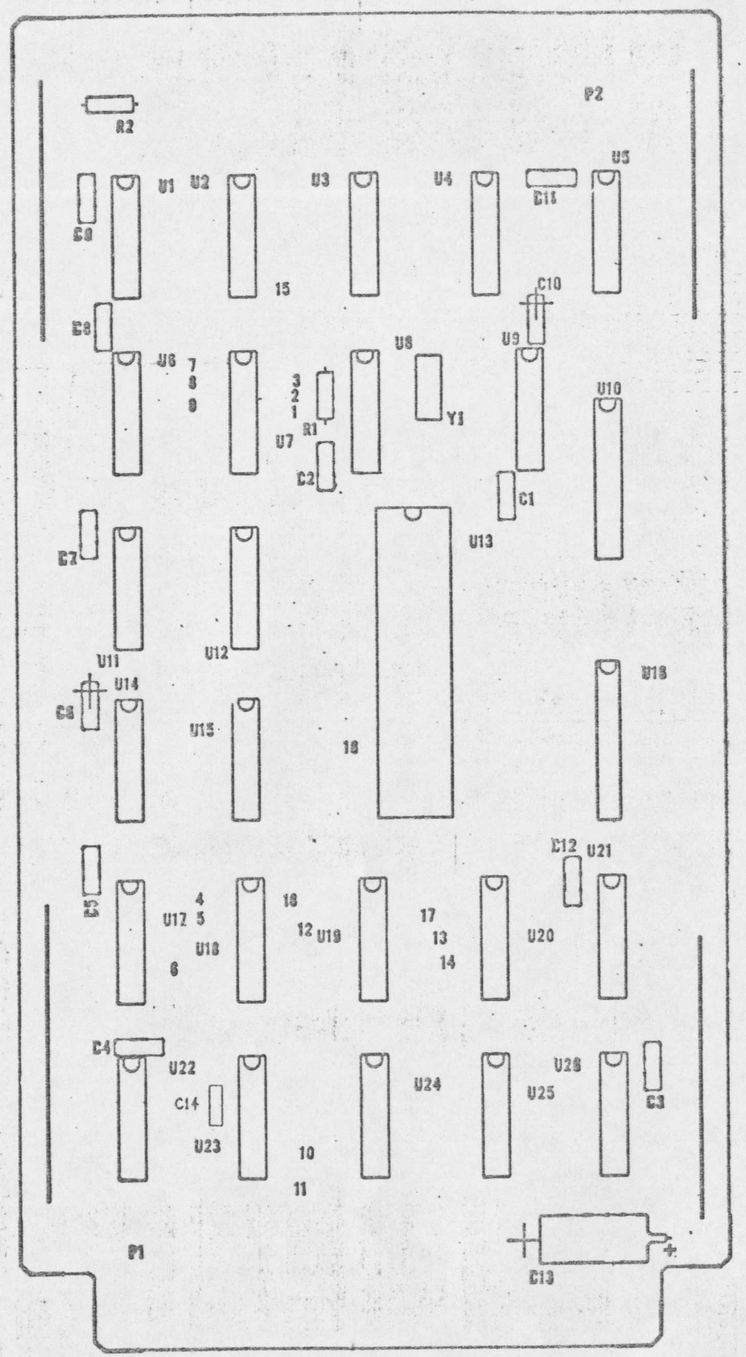
U21 LS174 — FIELDON

U26 LS37

P1

XOUT
XIN
REP
ANH
CEN
CLAMP
STROBE
(SHI) DAT
CXA
CYA
CXB
CYB

TEXAS INSTRUMENTS	DWN K Nelson 5-11-22	SIZE D	96214 SK 326758 A
	ISSUE DATE	SCALE NONE	SHEET 2



REF DES	ITEM NO
R1	3
R2	4
U1	6
U2	6
U3	8
U4	8
U5	9
U6	10
U7	11
U8	12
U9	9
U10	7
U11	6
U12	13
U13	5
U14	14
U15	15
U16	16
U17	
U18	17
U19	18
U20	19
U21	21
U22	
U23	18
U24	20
U25	19
U26	19
C14	22
C1	24
C2	23
C3	22
C4	
C5	
C6	
C7	
C8	
C9	
C10	
C11	
C12	
C13	22
Y1	25

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPR
	A	CHANGE ITEM 9	11/30	

REF	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
1	26			SCHEMATIC
1	25		MP180	CRYSTAL, 18 mHz
1	24		538137-407 CK06	CAPACITOR 1.0uF, 50V, 10%
1	23		538137-240	CAPACITOR .47uF, 50V, 10%
12	22		538137-218	CAPACITOR .01uF, 200V, 10%
1	21		SN74LS174N	INTEGRATED CIRCUIT (REG)
1	20		74N	(FF)
3	19		37N	(NAND)
2	18		109N	(FF)
1	17		368N	(INV)
1	16		273N	(REG)
1	15		10N	(NAND)
1	14		393N	(CTR)
1	13		202N	(NOR)
1	12		424N	(CLK GEN)
1	11		04N	(INV)
1	10		SN74LS251N	(MUX)
2	9		SN74S163AN	(COUNTER)
2	8		SN74S226N	(BUFFER)
1	7		SN74S471N	(PROM)
3	6		SN74LS287N	(PROM)
1	5		TMS9916J	INTEGRATED CIRCUIT (CONTROLLER)
1	4			RESISTOR, 330Ω, 1/3W
1	3		RNC60H1003FR	RESISTOR, 100KΩ, 1/8W
1	2		WTB40PR7SY	CONNECTOR, 40 PINS #22
1	1		326759-1	P.W.B. CONTROLLER

-2 -1 QTY REQD | ITEM NO | CODE IDENT | PART OR IDENTIFYING NUMBER | NOMENCLATURE OR DESCRIPTION | PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .125 +.004 -.001	.126 THRU .390 +.005 -.001	.251 THRU .500 +.005 -.001
.501 THRU .750 +.008 -.001	.751 THRU 1.000 +.010 -.001	1.001 THRU 2.000 +.012 -.001

NEXT ASSY | USED ON: PCB ASSY
APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ±1° 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.02

12/23/77

DWN Chris Swanson DATE 77/12/20
CHK
ENGR
QA
APP Gerald Cox
CONTR NO
DESIGN ACTIVITY RELEASE

TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas, Texas

P.W.B. ASSEMBLY BC1010
BUBBLE MEMORY CONTROLLER

SIZE D | CODE IDENT NO 96214 | DRAWING NO 326760
SCALE 2/1 | SHEET

NOTES: UNLESS OTHERWISE SPECIFIED
1. RESISTANCE VALUES ARE IN OHMS
2. CAPACITANCE VALUES ARE IN MICROFARADS
3. RESISTORS ARE ¼ WATT ±5%
4. DIODES ARE TYPE VSK130

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROV
	A	REVISED PER ENGR CHANGE [illegible]	2/7/76	
	B	ADDED CR9-CR12 ONLY	3/10/76	
	C	REVISED U4 & U1 ONLY	5/12/77	

5

TIB0103

FIELD DRIVERES

U5 75325

U6 75325

U1 74LS367

U2 75463

U3 75463

U4 75463

U7 7474

U8 MC1444 SENSE AMP

Q1 TIS93

Q2 TIS93

Q3 TIS93

Q4 TIS93

Q5 TIS93

CR1 CR2 CR3 CR4 CR5 CR6 CR7 CR8 CR9 CR10 CR11 CR12

X COIL

Y COIL

TRANSFER

REPLICATE

GENERATE

DETECTORS

P1

+17V
+12V
+5V
-12V
-5V
GND

$\overline{CXB}$ $\overline{CXA}$ $\overline{BDEN}$ $\overline{CYB}$ $\overline{CYA}$ +12V $\overline{XIN}$ +12V $\overline{XOUT}$ +12V $\overline{REP}$ +12V $\overline{ANN}$ +12V $\overline{GEN}$ +17V $\overline{CLAMP}$ DAT $\overline{STROBE}$

7XDRVM 7XDRVP 7BDEN 7YDRVM 7DRVP

TP1 TP2 TP3 TP4 TP5 TP6

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE
.015 THRU .123 +.004 -.001
.126 THRU .250 +.005 -.001
.251 THRU .500 +.006 -.001
.501 THRU .751 +.008 -.001
.751 THRU 1.000 +.010 -.001
1.001 THRU 2.000 +.012 -.001

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES
ANGLES ±1°
3 PLACE DECIMALS ±.010
2 PLACE DECIMALS ±.02

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

3/12/76 12-11
NEXT ASSY USED ON
APPLICATION

DESIGN ACTIVITY RELEASE

DWN [illegible] DATE 12/16/76
CHK
ENGR Glenn Mack 5/12/77
QA
APVD Gerald Coy 5/23/77
CONTR NO

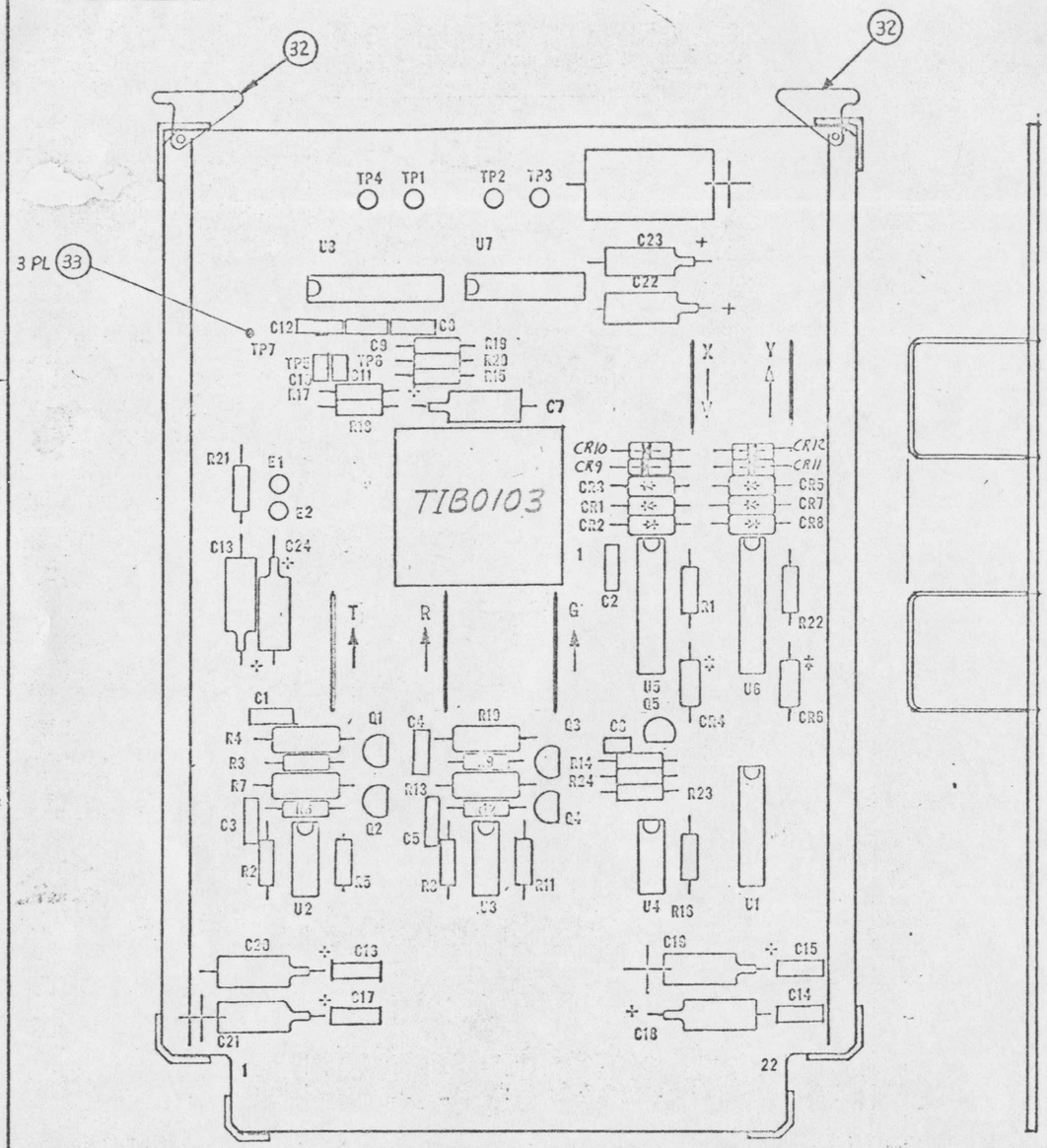
TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas, Texas

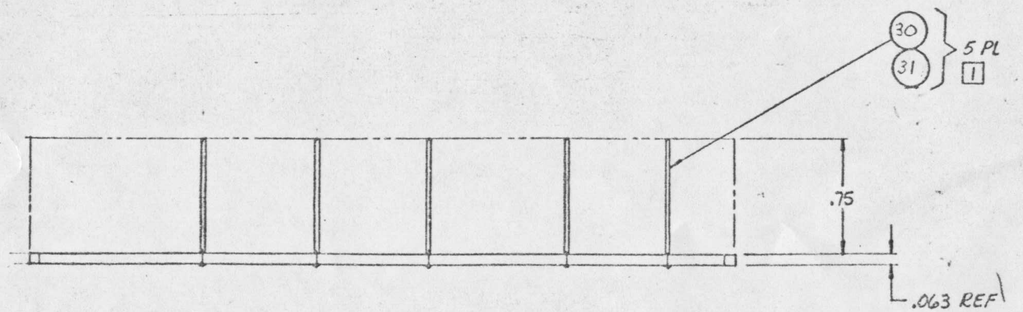
ELECTRONIC SCHEMATIC DIAGR
BK10103 MAG. BUBBLE MEM
PRINTED CKT. EVALUATION BO

SIZE D | CODE IDENT NO 96214 | DRAWING NO SK 312763 | SHEET

SCALE [illegible]

TI-7914F





REF DES	ITEM NO
R 1	3
2	4
3	25
4	24
5	4
6	5
7	24
8	6
9	6
10	26
11	6
12	6
13	27
14	7
15	28
16	8
17	9
18	9
19	10
20	10
21	28
22	3
23	6
R 24	6
C 1	12
2	12
3	12
4	12
5	12
6	13
7	14
8	12
9	12
10	15
11	15
12	16
13	14
14	12
C 15	12

REF DES	ITEM NO
C 16	12
17	12
18	14
19	14
20	14
21	14
22	14
23	17
C 24	14
CR9	18
CR10	18
CR11	18
CR12	18
CR 1	18
2	18
3	18
4	18
5	18
6	18
7	18
CR 8	18
U 1	19
2	20
3	20
4	20
5	21
6	21
7	22
U 8	23
Q 1	2
2	
3	
4	
Q 5	.2

NOTES:
1. INSERT 2.25 INCHES OF ITEM 30 OVER ITEM 31 PRIOR TO PROCESS 1

ZONE	LTR	DESCRIPTION	DATE	APPR
	A	ADDED CR9-CR11, DELETED ITEM 29	3-31-77	
	B	CHANGED QTY ITEMS 3, 8	6-24-77	

QTY REQD	ITEM NO	IDENTIFYING NUMBER	DESCRIPTION
	3	33	PIN
	2	32	EJECTOR, PWB
1	AR	31	BUSS WIRE, 18 AWG
1	AR	30	SLEEVING, TEFLON
		29	
1	28	RCR07G271JS	RESISTOR, 270Ω ,.25W, 5%
1	27	RCR20G820JS	RESISTOR, 82Ω ,.5W, 5%
1	26	RCR20G390JS	RESISTOR, 39Ω ,.5W, 5%
1	25	RNC60H2370FP	RESISTOR, 237Ω ,.125W, 1%
2	24		RESISTOR, 10Ω ,.25W, 1%
1	23	MC1444	INTEGRATED CIRCUIT (MOTOROLA)
1	22	SN7474N	INTEGRATED CIRCUIT
2	21	SN75325N	INTEGRATED CIRCUIT
3	20	SN75463N	INGEGRATED CIRCUIT
1	19	SN74LS367N	INTEGRATED CIRCUIT
12	18	VSK130	DIODE, SCHOTTKY (VARO)
1	17	AXIAL	CAPACITOR, .1μF, 50V
1	16	CK05	CAPACITOR, 470PF, 50V
2	15	CK05	CAPACITOR, .001μF, 50V
8	14	CRS13	CAPACITOR, 4.7μF, 50V
1	13	CK06	CAPACITOR, .47μF, 50V
11	12	CK05	CAPACITOR, .1μF, 50V
REF	11	SK312763	SCHEMATIC
2	10	RCR07G332JS	RESISTOR, 3.3KΩ, .25W, 5%
2	9	RCR07G272JS	RESISTOR, 2.7KΩ, .25W, 5%
2	8	RCR07G101JS	RESISTOR, 100Ω, .25W, 5%
1	7	RCR07G180JS	RESISTOR, 18Ω, .25W, 5%
6	6	RCR07G471JS	RESISTOR, 470Ω, .25W, 5%
1	5	RNC60H2740FR	RESISTOR 274Ω, .125W, 1%
2	4	RNC60H2371FR	RESISTOR, 2.37KΩ, .125W, 1%
2	3	RCR07G820JS	RESISTOR, 82Ω, .25W, 5%
5	2	TIS93	TRANSISTOR
1	1	312764-1	PRINTED WIRING BOARD

QTY REQD	ITEM NO	IDENTIFYING NUMBER	DESCRIPTION

1	SLDR	127-01	00	
SEQ NO	IDENT	P-SPEC	NO	ADDITIONAL
	PROCESS			CLASSIFICATION

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

0 THRU .12	.004 .001	.126 THRU .250	.005 .001	.251 THRU .500	.006 .001
.5 THRU .749	.008 .001	.751 THRU 1.000	.010 .001	1.001 THRU 2.500	.012 .001

NEXT ASSY | USED ON | APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02

APVD Glen Thomas DATE 2/8/77
CHK
ENGR
DA Gerald Coy 5/23/77
CONTR NO
DESIGN ACTIVITY RELEASE

TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas Texas

ASSEMBLY DRAWING
BK/0103 MAG. BUBBLE MEM
PRINTED CKT. EVALUATION BOA

SIZE	CODE IDENT NO	DRAWING NO
D	96214	SK 312765

SCALE 2/1 SHEET